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ABSTRACT

The relationship of boys' and girls' level of aspiration (LOA), achievement motivation, manifest anxiety, and intelligence to persistence behavior was explored in this study. Forty boys and 40 girls (ages 11-13) from two Catholic schools participated in this study. To measure subjects' persistence and LOA, subjects were given 5 sets of puzzle pieces and were asked to construct geometric forms from them. Although all five puzzles appeared to be solvable, the second, third, and fourth could not be constructed from the puzzle pieces that were available. Persistence was measured as the amount of time the subject spent trying to construct a puzzle on each trial. Before the subjects started to construct a puzzle they were told they could obtain a score as high as 100 or as low as 0 depending on how much of the task they got done. They were then asked what score they would aim for. LOA was measured as the difference between the scores reported to the subject and the level of aspiration for the next trial. The Thematic Apperception Test (TAT), the Children's Manifest Anxiety Scale (CMAS), and the Wechsler Intelligence Scale for Children-Revised (WISC-R) were used to measure subjects' achievement motivation, manifest anxiety, and intelligence, respectively. Significant correlations between persistence and LOA, and between persistence and achievement motivation were found for both sexes. A step-wise regression showed that the combination of LOA and achievement motivation was the best predictor of persistency for both sexes. The combination of LOA and achievement motivation was more crucial in determining persistence behavior for boys than for girls. Results are discussed from a social perspective. (Author/MP)

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Sex Differences in Persistence Behavior
of Children Ages 11-13

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ABSTRACT

40 boys and 40 girls from two Catholic schools participated in this study (ages 11-13). Measures were (1) five puzzles used to measure persistence and level of aspiration (LOA). (2) TAT to measure achievement motivation. (3) The Children's Manifest Anxiety Scale. (4) WISC-R, measure of intelligence. Results showed; (a) a significant correlation between persistence and LOA for both sexes. Boys ($r = .85$, $p < .001$), girls ($r = .67$, $p < .001$); (b) a significant correlation between persistence and achievement motivation for both sexes. Boys ($r = .80$, $p < .001$), girls ($r = .78$, $p < .001$). A step-wise regression showed that the combination of LOA and achievement motivation was the best predictor of persistency for both sexes. The combination of LOA and achievement motivation was more crucial in determining persistence behavior for boys than for girls. Results are discussed from a social perspective.

The present study has three main aims. First, the relationship between level of aspiration (LOA), achievement motivation, manifest anxiety and intelligence in relation to persistence behavior is explored. Second, attempts will be made to determine whether the independent correlations are the same for boys and girls. And third, to determine whether the patterns of subsets of the independent variables are the same for boys and girls. In most of the studies dealing with the above-mentioned variables, the basic problem was one of validity. This research goes beyond the straight-forward relationship between persistence and any one or two of the independent variables. The broader question is how achievement motivation, level of aspiration, anxiety, and intelligence interact with respect to persistence.

Method

Subjects

Two groups of subjects participated in this study. Forty (N=40) boys and forty (N=40) girls in the fifth, sixth and seventh grades in two Catholic elementary schools (ages 11-13).

Measures

Measure of Persistence and LOA

The task involved the construction of geometric forms from sets of five puzzle pieces which the experimenter designed. The form to be constructed was depicted on a card with no indication of how the individual pieces should be fitted together. Although all five puzzles appeared to be solvable, the second, third and fourth could not be constructed from the puzzle pieces that were available. The measure of persistence on each trial was the amount of time the subject spent trying to construct the puzzle. Before the subject removed the paper clip from the puzzle pieces, they were told they could get a score as high as 100 or as low as 0 depending on how much they get done even though they did

not finish. They were then asked what score they were going to try to make. The LOA data were based on the third and fourth trials. The measure was the D-score, which was the difference between the scores reported to the subject and level of aspiration for next trial.

Measure of Achievement Motivation:

All subjects were interviewed privately in order to obtain a measure of their achievement motivations. Four pictures were administered to all the subjects. The first was card #1 from the TAT (Murray, 1943), the second, third and fourth pictures were 24, 28, and 62 using numbers assigned by Atkinson (1958). Protocols were content analyzed according to the procedures described by McClelland, Atkinson and Lowell (1953).

Measure of Manifest Anxiety:

All subjects were given a short form of the Children's Manifest Anxiety Scale (Levy, 1958). The index of the level of anxiety was obtained by summing the number of items the subject answered "Yes".

Measure of Intelligence:

The brief form of the Wechsler Intelligence Scale for Children - Revised (WISC-R) consisting of five tests (Comprehension, Arithmetic, Vocabulary, Picture Completion and Object Assembly) was administered to all subjects in accordance with the standard procedures (WISC-R Manual, 1974).

Presentation Sequence:

Testing required two sessions. In session one, persistence and LOA were measured followed by the manifest anxiety. In session two achievement motivation and intelligence were administered and were presented in a counter balance order.

RESULTS

PERSISTENCE:

Means and standard deviations of the persistence measure are summarized for both sexes in Table 1.

TABLE 1
MEANS AND STANDARD DEVIATIONS -
PERSISTENCE MEASURE

GROUP		TRIAL			
		2	3	4	Total
BOYS (N=40)	MEAN (Sec.)	214.3	229.5	243.1	686.9
	SD	86.8	72.8	70.5	210.8
GIRLS (N=40)	MEAN (Sec.)	188.1	185.2	218.0	591.3
	SD	81.7	66.9	75.6	209.7

The ANOVA shown in Table 2 produced a significant effect for sex with boys (Mean = 686.9) showing a higher level of persistence than girls (Means = 591.3) $F(1,78) = 685.1; p < .001$.

The ANOVA shown in Table 2 also yielded a significant sex by trial interaction $F(2,156) = 14.9; p < .01$.

TABLE 2

SUMMARY OF ANALYSIS OF VARIANCE -
SEX, TRIALS, AND
PERSISTENCE SCORES

Source	SS	d.f.	MS	F
<u>Between Subjects</u>	110669	79		
A (Sex)	99338	1	99338	685.51**
Ss within Groups	11331	78	145	
<u>Within Subjects</u>	2460	160		
B (Trials)	38	2	19	1.5
A x B	387	2	194	14.9*
B x Ss within Gr.	2035	156	13	

* $p < .01$

** $p < .001$

Not only did the girls show less persistence in general than boys, there was a plateau effect for girls on trials two and three and then an increase in persistence on trial four. However, there was a steady increase in persistence with trials for boys (Figure 1).

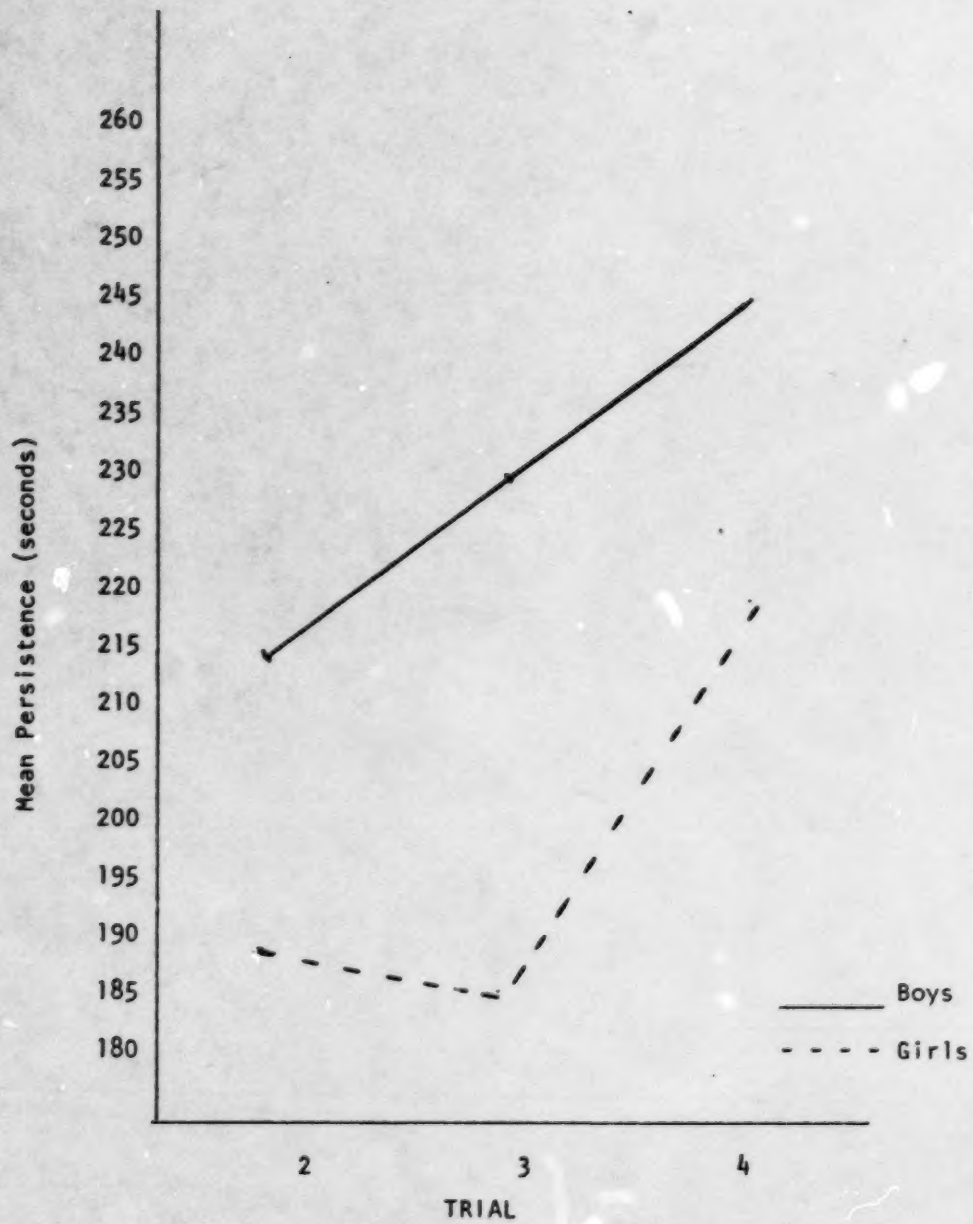


Figure 1. Mean persistence on the three puzzles of boys and girls.

INTERCORRELATIONS OF MEASURES:

Table 3 contains the intercorrelations for the sexes on all of the variables.

TABLE 3

INTERCORRELATIONS OF MEASURES-
BOYS AND GIRLS

	Level of Aspiration	Achievement Motivation	Anxiety	Intelligence
Persistence B.	.85***	.80***	-.14	.44*
G.	.67***	.78***	.16	.16
Level of B.		.66***	-.06	.49***
Aspiration G.		.47***	-.13	.23
Achievement B.			-.13	.36**
Motivation G.			-.07	.27*
Manifest B.				-.20
Anxiety G.				-.40**

* $p < .05$

** $p < .01$

*** $p < .001$

There was a significant correlation between persistence and LOA for both sexes. Boys ($r = .85, p < .001$), and girls ($r = .67, p < .001$). This correlation was significantly different between the sexes ($z = 1.96, p < .05$). The correlation between achievement motivation and persistence for both boys and girls were significant. Boys ($r = .80, p < .001$), girls ($r = .87, p < .001$).

MULTIPLE REGRESSION OF MEASURES:

Multiple regression was used to determine which combination of the independent variables would be the best predictor of persistence behavior. Table 4 presents the step-wise regression of level of aspiration, achievement motivation, anxiety, and intelligence on persistence scores.

TABLE 4

THE MULTIPLE REGRESSION - LOA,
ACHIEVEMENT MOTIVATION, ANXIETY,
INTELLIGENCE, ON PERSISTENCE SCORES

	Independent Variables	R	R ²	Beta
BOYS	Level of Aspiration	.85	.72	.85
	Ach. Motivation	.91	.82	.57
	Anxiety	.91	.82	.57
GIRLS	Ach. Motivation	.78	.61	.78
	Level of Aspiration	.86	.73	.60
	Anxiety	.87	.76	.57

Using persistence scores as the criterion, among boys level of aspiration was a significant predictor $R = .85$. The addition of achievement motivation significantly increased the accuracy of the prediction. The multiple regression analysis yielded a multiple regression of .91. This increment from step one to step two was statistically significant $F(2,37) = 20.0; p < .01$). The adding of anxiety and intelligence scores did not increase predictability of persistence scores in any significant way.

The best predictor of persistency for girls was the achievement motivation scores, $R = .78$. The addition of level of aspiration increased the correlation to $R = .86$. The increment from step one to step two was statistically significant. $F(2,37) = 15.0; p < .01$). The anxiety and intelligence scores did not increase predictability of persistence scores in any significant way.

The results also indicated that the combination of level of aspiration and achievement motivation was more crucial in determining persistence behavior for boys ($R = .91$) than for girls ($R = .86$) $F(2,37) = 18.0; p < .01$).

DISCUSSION

PERSISTENCE AND SEX DIFFERENCES:

The finding that girls demonstrated less persistence than boys was similar to those of previous research (Dweck & Gillard, 1975; Dweck & Rappucci, 1973). Of prime importance was the finding that there was a plateau effect for girls on trials two and three; however, there was an increase in persistence on trial four. In contrast, there was a steady increase in persistence through all trials for boys.

One way of looking at the observed sex differences maybe in terms of the attributional tendencies of boys and girls. Boys usually attribute failure to unstable factors such as lack of effort or bad luck whereas, girls show a greater tendency to attribute failure to lack of ability which would lead to a lack of persistency when they are experiencing failure. For girls, failure is more often resolved by withdrawal and discontinuation whereas for boys an attempt is made to overcome failure by increased effort (Tyler, 1956).

ACHIEVEMENT, MOTIVATION, LOA AND PERSISTENCE:

The finding that achievement motivation was positively correlated with persistence scores was similar to those of French & Thomas (1958); Feather (1961). The fact that highly motivated individuals worked longer on the puzzles obviously does have general implications for prediction of success.

In looking at the achievement motivation and level of aspiration scores, striking differences again appeared. Boys' scores were significantly higher than girls'. During the course of growing up, boys are encouraged to develop qualities of achievement motivation and higher LOA to a greater extent

than are girls. Higher fear of success in girls contributed to their low achievement motivation scores. One explanation that might shed some light on the finding with the LOA measure, is the fact that the task was of a performance nature, rather than one calling for verbalization. Females tend to score lower than males on performance tasks.

MULTIPLE REGRESSION OF MEASURES:

The results indicated that the combination of LOA and achievement motivation was the best predictor of persistency for both boys and girls. The answer as to why the combination of LOA and achievement motivation was more crucial in determining persistence behavior for boys than for girls maybe cultural.

Since this study was conducted with children ages 11-13, future research should be conducted to determine whether or not these relationships hold for younger children.

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